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engraving by the letters *cc*) ; *l* is the table that supports the plate to be etched ; *n* the slide-rest (*f* in the engraving) that moves the table on the bed *o* in the direction of its length, and *p* the head of the screw which actuates the other slide-rest (*g* in the engraving), by means of which the table is moved in the direction of its breadth ; *r* is one of the triangular sockets (*i* in the engraving) in which the triangular uprights (*h h* in the engraving) slide ; and *s* (*j* in the engraving) is one of the binding-screws by means of which they may be secured at any required height.

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## No. II.

### CRAYONS FOR DRAWING ON GLASS.

*The LARGE SILVER MEDAL was presented to Mr. S. B. HOWLETT, of 83½ Pall Mall, Chief Military Draughtsman in the Ordnance Department, for his Crayons for Drawing on Glass.*

MR. HOWLETT's perspective tracing-glass consists of a plate of clear glass fixed in a frame, and set upright on a tripod stand, so as to bring it on a level with the eye of the artist. From the top of the tripod projects horizontally a light frame, with a hole at the end, for the purpose of supporting in a vertical position a pin, at the top of which

is a small perforation, through which the artist looks while he traces on the glass the objects seen through it.

So far the instrument does not differ in any material respect from those usually employed for this purpose. But as glass is not capable of receiving the traces made by the pencil, it is necessary to cover the surface of the glass with some substance, at the same time as transparent as possible, and capable of being marked by a pencil. These conditions, however, have not hitherto been found to be reconcilable: the most transparent paper that can be made is not capable of allowing distant objects to be seen through it with sufficient distinctness, and glass itself, though unexceptionable with regard to transparency, will not retain traces from a black-lead pencil, or from any other of the materials usually employed in sketching.

The way in which Mr. Howlett has solved this problem, is by the invention of crayons capable of bearing a fine point, and of leaving traces on the surface of glass. In the use, therefore, of this instrument, the objects are delineated with the crayon on the surface of the glass, and afterwards a piece of paper is laid over the drawing, and is secured by its four corners to prevent it from slipping; the glass with the attached paper is then held up to the light, and the objects already drawn on the glass are traced on the paper with a common pencil. If the paper, instead of being laid on the drawing, is placed on the opposite surface of the glass, the copy will be made in a reversed position, and is thus immediately adapted to the use of the engraver: or the tracing on the glass may be transferred to the paper, by laying the paper over the tracing, and rubbing them together with an ivory-handled knife.

If the tracing-paper employed is thick or opaque, so

that the lines on the glass are only seen indistinctly through it, a great degree of blackness may be given to them, by dusting the surface of the glass over with dry lamp-black, and then rubbing it off with a soft camel-hair brush, very lightly applied; the traces made by the crayon being somewhat adhesive, the lamp-black will be fixed on them by the action of the brush, while it is swept off from the rest of the surface.

The crayons are made of three degrees of hardness, to suit any climate, and are not acted on by water, either fresh or salt. Asphaltum and yellow bees'-wax, in equal proportions, are melted together, and then lamp-black, just sufficient to give it colour, is stirred in; the mixture is then cast into sticks, and forms a crayon suitable for a temperate degree of heat; but, for very hot weather, the hardest kind of heelball, lowered with a little tallow, answers admirably.

The glass plate, previous to drawing on it, should be rubbed well with a leather, in order to free it from moisture or dirt, and the artist, while making the drawing, should wear a finger-stall.

It is sometimes difficult to bring the crayon to a fine point with a common penknife; for if the edge of this latter is set to the shape of a very fine wedge, it will slip through the crayon, as, on the other hand, a blunt wedge will break off the point before it has been cut sufficiently fine; but if the knife is set chisel-shaped, the oblique surface being applied next to the crayon, shavings of extreme tenuity may be taken off, and a very fine point will be the result.